ABSTRACT OF THE DISCLOSURE

Capacitor based pulse forming networks and related methods are provided which require fewer inductors are that pulsed more frequently to provide a smaller, lower mass, and lower inductance pulse forming network having better pulse shaping characteristics than conventional pulse forming networks. In one implementation, the invention can be characterized as a capacitor based pulse forming network comprising a plurality of inductors adapted to be coupled to a load, a plurality of capacitor units, and a plurality of switches. Each switch couples a respective capacitor unit to a respective inductor, wherein multiple capacitor units are coupled to each inductor by separate switches. The plurality of switches are adapted to non-simultaneously discharge the multiple capacitor units to provide non-simultaneous pulses through a given inductor to the load and not through other inductors. The non-simultaneous pulses form at least a portion of an output pulse waveform to the load.